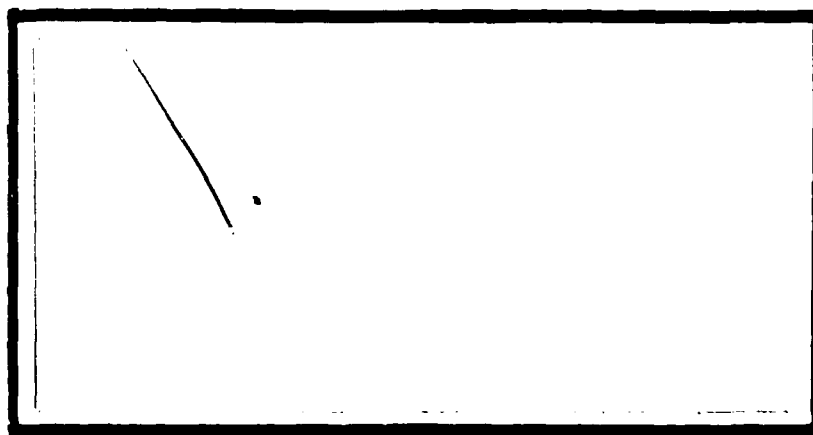


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AFIT/GLM/LSM/88S-21

A STUDY OF THE TECHNICAL VERSUS
ADMINISTRATIVE ORIENTATION OF
ENTRY-LEVEL AIRCRAFT MAINTENANCE
OFFICER JOBS IN THE
STRATEGIC AIR COMMAND

THESIS

Gerald J. Frisbee
Captain, USAF

AFIT/GLM/LSM/88S-21

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AFIT/GLM/LSM/88S-21

A STUDY OF THE TECHNICAL VERSUS ADMINISTRATIVE ORIENTATION
OF ENTRY-LEVEL AIRCRAFT MAINTENANCE OFFICER JOBS IN
THE STRATEGIC AIR COMMAND

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Logistics Management

Gerald J. Frisbee, B.G.S.

Captain, USAF

September 1988

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Preface

This research examined the technical versus administrative orientation of the entry-level aircraft maintenance officer (AMO) in the Strategic Air Command. Specifically, it attempted to identify the expectations of senior maintenance managers--officer and enlisted--regarding the entry-level AMO. Relationships between expectations and the following variables were examined: rank, duty position, aircraft maintenance experience, command experience, Air Force longevity, duty position tenure, and aeronautical rating of officers. Based on these findings, recommendations were made to improve entry-level AMO job performance.

I am grateful to my thesis advisor Lieutenant Colonel Richard I. Moore for his patient guidance and encouragement and his ability to make me "see the forest from the trees." I thank Major Phillip E. Miller for his proofreading and suggestions.

Finally, I owe eternal gratitude to my wife [REDACTED] my [REDACTED] and my [REDACTED] for their tireless loyalty and understanding and also for the sacrifices they made during my AFIT trials.

— Gerald J. Frisbee

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Abstract

A random sample of 300 senior aircraft maintenance managers in the Strategic Air Command was surveyed using a specially developed questionnaire to determine preferences regarding the technical versus administrative orientation of entry-level aircraft maintenance officer (AMO) jobs. Specific expectations of commissioned officers and noncommissioned officers (NCOs) were examined to determine whether any difference in expectations existed between the two groups. Relationships between expectations and the following variables were examined: rank, duty position, aircraft maintenance experience, command experience, Air Force longevity, duty position tenure, and aeronautical rating of officers. Answers to selected questions varied significantly by one or more of these variables. Analysis of the results showed both groups expected an entry-level AMO to be slightly more technically than administratively oriented. Based on these findings, recommendations were made to improve entry-level AMO job performance.

A STUDY OF THE TECHNICAL VERSUS ADMINISTRATIVE ORIENTATION
OF ENTRY-LEVEL AIRCRAFT MAINTENANCE OFFICER JOBS IN
THE STRATEGIC AIR COMMAND

I. Introduction

Chapter Overview

This chapter provides background information on the technical and administrative orientation of entry-level aircraft maintenance officer (AMO) jobs in the Strategic Air Command (SAC). It presents the general issue of this research, the specific problem statement, the research questions and hypotheses, and the investigative questions. This chapter also discusses the scope of the research and defines several key terms.

Background

The AMO's job has been a dichotomy between manager and technician since it originated. According to Bair, there has been a continuing controversy among maintenance managers concerning whether the AMO is more manager than technician or more technician than manager (2:9). The first AMOs tended to be more technical and were actually called engineering officers (2:12). The engineering officer

training program was similar to that of an aircraft mechanic. "Training lasted approximately nine months with an obvious and almost total emphasis on the officer's technical knowledge" (2:118).

The advent of more sophisticated and complex aircraft in the late 1940's caused a change in the AMO's job. The AMO's managerial role increased while his technical role decreased. "The training emphasis was gravitating toward management in response to the AMO's changing environment" (2:118). The trend in reducing technical training and increasing management training has continued through the years. In 1982, Bair and Gatewood (2) noted:

Currently, the AMOC [AMO Course] course curriculum is arranged with 60 percent of the instruction time in management subjects. . . .

The general trend in AMO training has been a decrease in the technical proportion of instruction concurrent with a decrease in the length of training. The general trend in the Air Force during this same period has been toward acquisition of a more complex aircraft: constructed of more exotic materials, capable of operating in greater environmental extremes, and ready to perform a greater variety of missions. Is the AMO as flexible and prepared as the aircraft [2:119]?

The question of AMO preparedness had been considered earlier. In 1979, Major General Martin C. Fulcher, SAC Deputy Chief of Staff for Logistics, addressed concern over the decreasing relevance and increasing ineffectiveness of AMO training:

We . . . are vitally concerned [with] the development of a strong, professional maintenance officer force . . . We believe there is sufficient cause to doubt that the current AMOC can produce students with the basic skills required . . . [15].

Obviously, General Fulcher felt AMOC might not give AMOs the skills necessary for satisfactory job performance. The question not posed to General Fulcher was "What expectations did SAC have that their maintenance officers were not fulfilling?" The question remains unanswered.

Air Force Regulation (AFR) 36-1, "Officer Classification Regulation" summarizes the normal duties and responsibilities for Air Force Specialty Code (AFSC) 4024, "Aircraft Maintenance Officer" (10:A13-15):

Manages aircraft maintenance activities, including organizational, intermediate, and depot maintenance functions; and removal, repair, inspection, overhaul, and modification of aircraft, avionics, and associated support equipment. Commands aircraft maintenance units [10:A13-15].

The regulation also describes a mixture of managerial and technical tasks, such as:

a. Plans and organizes aircraft maintenance activities. . . . Develops and recommends improvements to procedures and techniques for maintenance . . . Establishes performance standards including quality and time standards . . . b. Directs aircraft maintenance activities. . . . Interprets technical orders and directives . . . c. Coordinates aircraft maintenance activities. . . . Advises commanders, supervisors, and staff . . . d. Supervises technical aircraft maintenance functions. Develops and applies procedures and techniques . . . provides technical advice in determining the nature and extent of repairs to aircraft . . . Serves as technical advisor . . . Ensures correct administration of manhour documentation . . . [10:A13-15].

Although this provides a broad description of an AMO's job, it does not prioritize the duties and responsibilities, nor does it clarify the manager versus technician question.

Additionally, in contrast to other jobs in the Air Force, such as engineer or auditor which have mandatory academic requirements, degree requirements for AMOs are varied and optional. Namely, "Undergraduate academic specialization in management, engineering, mathematics or physical sciences is desirable" (10:A13-16). The lack of a particular educational background might not prevent an AMO from performing satisfactorily if job expectations were simple. Unfortunately, some expectations are not simple. Since some people disagree on the AMO's role, it makes sense they would disagree on how to evaluate the AMO's effectiveness (31).

Effectiveness, individual and organizational, has received much attention in the research world:

The concept of organizational effectiveness is encountered repeatedly in the literature on organizations, but there is only a rudimentary understanding of what is actually involved in or constitutes the concept [28:546].

Perhaps most intriguing is the idea that the "answer to the question 'How well is entity X performing?' is inevitably contingent on whom one is asking" (4:212). This means different individuals or groups (constituencies) will form different assessments of effectiveness (4). "This suggests that the models for effectiveness will be different for different constituencies" (31:67). If this is true, what causes it?

Tsui and Milkovich claim:

Constituents' expectations are directly derived from their roles or functional responsibilities, their unique positions in the organizational hierarchy, or their career and personal circumstances. . . . Thus, potential differences in constituency expectations exist [32:522].

"The same managerial behavior may lead to differential effectiveness assessment by two constituencies when their expectations are dissimilar" (31:68). Is it possible that some constituents (e.g. NCOs) expect the AMO to be a technician while others (e.g. officers) expect him to be an administrator? Consequently, if he was either a manager or a technician, but not both, would not at least one group consider him ineffective since he failed to meet that group's expectations? Is it possible that there is agreement among the constituencies' expectations regarding AMOs? If not, would knowing the expectations of the various constituencies help the AMO improve job performance? Would it be possible to identify mandatory academic requirements and aptitudes an AMO must possess to satisfy the constituencies' expectations? These are questions worth answering.

Although no formal evidence appears to exist, there are indications that base-level maintenance managers in SAC (commissioned and enlisted) prefer AMOs who have either high administrative or high technical skills, but not both (2:92). Aircraft maintenance officers must know what these expectations are to maintain satisfactory job performance.

Specific Problem

Base-level maintenance managers in SAC prefer AMOs to have varying levels of administrative and technical skills. This research will identify to what degree, if any, base-level maintenance managers in SAC prefer one skill over the other.

Investigative Questions and Hypotheses

The following questions were asked in support of the research objective:

1. Do senior aircraft maintenance supervisory personnel at base level in SAC prefer administratively or technically oriented entry-level AMOs?

2. To what degree do the commissioned officers' preferences agree/disagree with the non-commissioned officers' (NCOs) preferences?

3. Does a disagreement between officer and NCO preferences lend evidence to the need for entry-level AMOs to be oriented equally to both technical and administrative duties?

The following hypotheses were also developed:

1. When survey responses are viewed collectively, officers and NCOs will show no clear preference for administratively or technically oriented entry-level AMOs, but will indicate a preference for AMOs oriented equally to both areas.

2. When survey responses are viewed separately, commissioned officers will prefer administratively oriented entry-level AMOs and NCOs will prefer technically oriented AMOs.

Scope

This research was limited to a random sample of military maintenance managers assigned to SAC's 25 flying wings in the continental United States and Alaska. Parallel studies of the Military Airlift Command (AFIT/GLM/LSM/88S-58) and the Tactical Air Command (AFIT/GLM/LSM/88S-22) were accomplished by Captain Michael E. Privette (USAF) and Captain Nancy E. Frye (USAF), respectively.

Definitions

The following definitions were used for this research:

Entry-level aircraft maintenance officers are lieutenants and junior captains new to the career field and/or SAC who serve in branch-level positions.

Technical areas encompass the duties or actions that focus on producing safe, reliable, mission capable aircraft.

Administrative areas include the duties or actions that focus on maintaining the organization and not on the organization's product (i.e., mission capable aircraft).

II. Literature Review

Chapter Overview

Although no literature addressed a topic identical to this thesis, there were many papers and articles which covered related areas. This chapter presents various views on one subject directly related to this thesis--leadership. Primarily, it examines works that deal with the technical and/or administrative abilities required of a good leader. The premise is that, among other things, an AMO should be a good leader. A mix of civilian and military authors' observations are provided.

Discussion

The concept of leadership has been scrutinized and vigorously debated by many people including businessmen, social scientists, and military personnel. A primary issue has focused on what factor or factors determine successful leadership performance. According to Bennis, ". . . the first requirement for genuine leadership performance is that leaders at every level must lead, not just manage" (3:160). Downey expressed similar thoughts in Management in the Armed Forces:

Leadership cannot be replaced adequately by modern phrases like man management. Leadership is a living thing which has to be fostered and developed to suit changing conditions, but which can never be discarded [11:172].

Jacobs said a leader's "sense of timing" played a key role. He felt a leader needed to know when to use a particular interaction technique just as much as he needed to know how to use the technique (18:257). Cronin's Thinking About Leadership voiced this opinion concerning the role of specialization:

Good leaders, almost always, have been get-it-all-together, broken-field runners. They have been generalists. Tomorrow's leaders will very likely have begun life as trained specialists [7:197].

Bennis also examined the topic of competence--how competent is the leader at performing his or her required tasks? Downey echoed the importance of leader competence. He claimed that at any level a commander's authority and credibility are based on the commander's personal imprint upon the system, in addition to his rank and appointment. This means a commander must have more than just a winning personality. He must understand how the system works and he must always show ". . . he is part of it [the system] in spirit" (11:176). It is mandatory for a commander to know his job and to do it well. Downey also emphasized the importance of a commander knowing his men and their jobs. "He must know his men and know enough about their jobs to direct them and to be appreciative or justly critical of the results" (11:176).

Lieutenant General Edward M. Flanagan, Jr. (USA - Retired) seemed to agree with Downey and Bennis. He offered this practical, applicable advice for being a good military leader in Before the Battle:

Humility coupled with competence, self-confidence, and full knowledge of one's own capabilities and limitations are the ingredients that make an outstanding commander and top-notch person [14:102].

Former Army Chief of Staff, General Edward C. Meyer, felt that "To lead, you must know your soldiers, yourself and your profession" (22:84). Jacobs also made the point that "It is probable that the ability to lead must be based on the competence to make some kind of unique contribution to the success of the group being led" (18:340).

Bennis further stated that although many organizations have taken steps to increase leader performance, they have overlooked a major point:

It is truly unfortunate that our institutions don't build in reflective structures where we can take time out to examine ourselves and our operations in a very serious way; that we are too overloaded, too reactive to sheer, immediate events to ask the big questions--the ones that concern the very purposes of the institutions [3:165].

Bennis contended an organization will fail to achieve truly effective performance from its leaders until these questions are answered.

Fiedler proposed a theoretical framework for understanding leadership effectiveness after a 15-year research effort. The Contingency Model of leadership effectiveness considers the leader's personality as well as situational

factors. Fiedler claimed that despite the many programs designed to increase an individual's leadership skills, few adequate evaluation studies have been done to assess the true value of those programs:

Organizations have been more than happy to spend money on training programs but they have been considerably less eager to find out whether the training really does any good [13:251].

Downey reinforced this position. "Leadership, like other human activities, needs to be dissected and understood deeply if it is to evolve" (11:173). Fiedler's conclusion stressed the importance of the leader, organization, and situation mix. He believed a leader's performance was constrained as much by the organizational environment as it was by the leader's abilities. He also said it was meaningless to talk about effective leaders or ineffective leaders--". . . we can only speak of a leader who tends to be effective in one situation and ineffective in another" (13:261).

McCall and Lombardo summarized the futility of searching for a single, best leadership model in Leadership: Where Else Can We Go? They found organizations and leaders usually have conflicting and contradictory elements. It is also common to find leader behavior that is illogical for, or out of harmony with, a particular organizational climate. Therefore, it would be ". . . bizarre to expect a leader to have one 'style', or one goal, or one task" (20:154).

Cribbin (6) postulated managers face opposing and conflicting forces in their work environment. He asserted practicing managers can best overcome these problems by becoming effective leaders as well as effective managers. Cribbin identified different methods managers have of becoming better leaders. These included relying on their own experiences, studying other effective leaders, and examining significant research findings (6). He also believed an organization has certain options for getting the best leader for a given situation:

Any firm has five alternatives. (1) It can select only those managers whose leadership style is compatible with that esteemed by the firm. This entails the loss of many good people. (2) It can try to get managers to change their personalities, a fatuous endeavor at best. (3) It can place people in situations best suited to their natural leadership style. Although this can be done at times, on a grand scale it could be highly disruptive. (4) It can train managers to alter their styles--a useful undertaking, but one that is usually costly, time-consuming, and difficult. There is also the danger of "regression to the familiar," that after training, managers will revert to the old habits with which they are comfortable. (5) It can engineer the job to fit the person, working with the four variables so as to get the best fit possible [6:21].

Unfortunately, there probably is not one particular trait or characteristic which can be used to identify potential leaders. Cribbin explained that although similar leadership characteristics tend to be present in a wide variety of organizations, a great many characteristics or qualities are unique to a given organization. He also noted that a manager's knowledge of the characteristics,

qualities, or behaviors that attract or alienate the work group is more important than the actual qualities the manager may or may not have (5:31).

Pfeffer expanded on Cribbin's idea when he spoke of the different constraints in the work environment which influenced leader behavior and limited the leader's ability to have an impact. The leader does not work in a solitary environment. He has people who work for him (subordinates), people who work with him on an equal basis (peers), and people for whom he works (superiors). Each of these groups has certain expectations for the leader's behavior and/or performance. Additionally, they all have some way of obtaining these expectations. The pressures to meet the various expectations of peers and subordinates, as well as the demands of superiors, influence the leader's actual behavior (25:20).

Fulk and Cummings also dealt with the leader and subordinate relationship. They determined subtle cues are transmitted between, and interpreted by, leaders and subordinates. This information communicates ". . . the relative influence of each party in task boundary definition" (16:80). This same information ". . . can explicitly and verbally formulate expectations regarding the roles each individual will play . . ." (16:80).

Gardner criticized the fallacy of looking for generic leadership qualities for specific leadership positions. He

asserted the qualities needed for leadership depend on the specific kind of leadership being addressed. Gardner essentially said that leadership is more restricted than it is universal. "Even in a single field there may be different kinds of leadership with different required attributes" (17:186).

Stokesbury maintained true leadership ability was an art, not a science, and therefore could not be taught or learned the way other sciences are taught or learned. He held the primary reason for this inability to teach leadership was the difficulty encountered when trying to describe the elements of the leader's qualitative skills or gifts in quantitative terms. His conclusion was that we are ". . . trapped by the inadequacies of the language to describe qualities that defy precise definition" (29:6).

Perhaps Bennis put it most succinctly when he spoke of predicting leadership potential. He said there are leaders with low energy and leaders with high energy. There are appealing and unappealing leaders. However, there is no research that suggests one trait or one characteristic has any value in determining leadership potential--"None--not even intelligence" (3:175).

It may be impossible to predict which person will be an effective leader because he or she has certain traits. On the other hand, it may be possible to predict a person will be an ineffective leader if he or she lacks particular

skills. This point was made clear by Jacobs in his analysis of role theory findings relevant to leadership practices. He found that most people fail to lead in leadership positions ". . . because they are not 'open' to counter-influence attempts by their subordinates, or, in present terms, have inadequate skills in social exchange" (18:341).

Argyris subscribed to the idea that people may actually be doomed to fail as leaders through the influence of those institutions which are normally considered the very fabric of our society and their own actions. He claimed schools, churches, and other social organizations seem to actually indoctrinate people with certain "theories of action" that make them susceptible to failure when they work together and solve problems (1:x). Argyris also said people will have difficulties with each other and will rely on certain diplomatic skills (as well as skills of deception) in order to maintain the appearance of harmony. He further explained that most people will be ignorant of the extent to which they cause this problem, but fairly cognizant of when others do (1).

In The Ambiguity of Leadership, Pfeffer discussed the circuitous logic found in the organizational leadership environment and how it affects leader behavior. Pfeffer concluded that people who believe in the importance of leadership also tend to believe that persons who occupy leadership positions are chosen and instructed according to

how well they can increase the organization's performance. He also asserted that belief in a leadership effect cultivates a set of activities aimed at enhancing leadership effectiveness. At the same time, people who manage their own careers are inclined to emphasize activities and maturing behaviors that will increase their own leadership skills--believing such a strategy will make advancement easier and more certain (26:138).

Dachler's central thesis stressed the importance of looking at the organization, not the individual, when viewing the leadership environment. He held that leadership and management concepts were not critically linked to certain individuals who were delegated those roles. Dachler also emphasized that a leader/manager does not lead/manage individuals or individual behaviors and attitudes. "Furthermore, what is being led or managed are, instead, collectivities and social systems--very complex ones at that . . ." (8:102). Dachler believed views of leadership or management are closely tied to the fundamental assumptions made about the nature of social systems (8).

What conclusion(s) can be made about leadership and leader effectiveness from the expanse of available research information? Probably the most astute observation was made by Argyris in Increasing Leadership Effectiveness:

. . . in order to bring about truly basic changes in institutions (of all types) and their management that do not wash out under the pressures of everyday life, human beings will have to develop new values, new skills, and new concepts of individual and organizational effectiveness [1:x].

Summary

This chapter presented various views on one subject directly related to this thesis--leadership. It examined different aspects of this subject such as: leadership versus management, specialization versus generalization, and technical versus administrative abilities. Some articles addressed key characteristics of leaders and leader behavior while others looked at the organization, not the individual, when viewing the leadership environment. A mix of civilian and military authors' observations was presented to provide a background for determining what abilities might be required of an AMO.

III. Methodology

Chapter Overview

This chapter describes the methodology used to accomplish the research objectives presented in Chapter I. The population of interest is defined first, followed by a description of the sample. The third subject is the survey instrument. The chapter concludes with a description of the statistical analyses applied to the survey data.

Population

The population of interest for this research was aircraft maintenance managers in SAC, specifically, DCMs, assistant DCMs, squadron commanders, maintenance supervisors, maintenance superintendents, branch chiefs, and shop chiefs. Munitions maintenance personnel were not included. The population was limited to the 25 flying wings located in the 48 contiguous states and Alaska. Generalizations of the research findings are restricted to this population. No attempt can be made to generalize the results of this research beyond the stated population.

The following estimate of the population was derived using AFR 66-1, Maintenance Management (9), and the SAC Maintenance Officer's Handbook (30):

DCMs/assistant DCMs, 50 individuals; squadron commanders, maintenance supervisors, and maintenance superintendents, 69 individuals in each category; branch chiefs, 312 individuals; and shop chiefs, 964 individuals. The total population was estimated at 1533.

Sample

A disproportionate stratified random sample design was used to sample the population. Stratifying the sample increased the statistical efficiency of the conclusions that were made about the different subgroups (12:307). A sample size of 50 from each of the 6 subgroups was considered adequate for this research due to the marginal returns provided by a larger size (23:290-330). Had the return rate been only 60%, it would have generated 30 responses in each of the strata. This would still have allowed the Central Limit Theorem to be invoked during statistical analysis (21:257). The total sample size for the survey was 300.

Survey Instrument

It was necessary to create a survey instrument to gather the data required to answer the investigative questions because no suitable existing survey could be found. A mail survey was the most practical method given the size and geographic dispersion of the sample, the number

of questions being asked, and the limited time available for data collection (12:158).

A questionnaire was written in collaboration with two students who were conducting parallel studies of the Tactical Air Command and the Military Airlift Command. The use of a standard questionnaire across the three commands provided a data base for follow-on studies that might examine the differences and/or similarities across command lines. The questionnaire was divided into 8 sections and contained 65 questions. The persons sampled were asked to provide anonymous responses. Table 1 shows a breakdown of the sections and identifies the level of data associated with each one.

The questionnaire was pretested by a stratified random sample of 18 senior maintenance managers from the 4950 Test Wing at Wright-Patterson AFB, Ohio (23:389-390). Minor changes were made to correct noted deficiencies before the final survey was published. The questionnaire appears in its entirety in the Appendix.

Each person sampled received a questionnaire, a computer coded answer sheet, and a self-addressed return envelope. The respondents were asked to first write their answers on the survey booklet and then to transfer them to the answer sheet. This procedure allowed for error checking in the event an answer sheet was damaged or was improperly coded. Persons were asked to contact the researcher by

telephone if they had any questions. Responses were machine coded into a data base when they were received.

Table 1
CLASSIFICATION OF QUESTIONNAIRE DATA

Survey Question Numbers	Section Number	Data Level
1 - 8	1	Nominal
9 - 13	2	Nominal
14 - 16	3	Nominal
17 - 38	4	Ordinal
39 - 48	5	Interval (5-pt scale)
49 - 59	6	Nominal
60 - 61	7	Nominal
62 - 65	8	Interval (5-pt scale)

Data Analysis Techniques

Descriptive and inferential statistical analysis of the data was accomplished using computer support provided by the Air Force Institute of Technology. The methods used in each area are described in their respective sections.

Descriptive. Demographic data were used to sort the responses according to subgroup. Where appropriate, frequency distributions, means, standard deviations, and modes

were determined for the six duty positions, the officers, the NCOs, and the sample as a whole. These descriptive statistics were then used to examine investigative questions 1 and 2, and hypotheses 1 and 2.

Inferential. Both parametric and nonparametric tests were used to analyze investigative questions 1 and 2, and hypotheses 1 and 2. The t-test was used on responses from sections 5 and 8 to test the hypotheses

H.: The mean response for a particular question was the same for two subgroups.

H.: The mean response was different.

The chi-square statistic was used on responses from sections 2, 3, 4, 6, and 7, to test the hypotheses

H.: The answer to a particular question was independent of the subgroup responding.

H.: The answer was dependent on the subgroup.

Results of the analyses were used to describe the preferences, if any, of the different subgroups. Based on these preferences, recommendations were made about the type of training SAC AMOs should have in order to meet the expectations of the people for whom they work and of the people who work for them.

IV. Results and Analysis

Chapter Overview

This chapter details the methods used to analyze the data provided by the survey responses. It also presents a statistical analysis of responses from Sections 2 through 8 of the survey instrument. Section 1 (Questions 1 through 8) results contained demographic information. A summary of the survey response rate and a demographic outline of the respondents is provided. Where appropriate, significant variables affecting responses are identified. The Chi Square value and the significance level (p-value) are given in parentheses (Chi Square, p-value) immediately following the variable name. The Statistical Package for the Social Sciences (SPSS) was used to manipulate the data and to develop the structure required for analysis.

Survey Responses

A total of 210 (120 officers, 90 NCOs) valid responses were received--a 70 percent return rate. There were 215 surveys returned. Five first lieutenants inadvertently completed surveys addressed to their enlisted counterparts. These five surveys were discarded. The officers' response rate of 80 percent was much higher than the NCOs' 60 percent rate. Typically a 30 percent return rate for this type

survey is considered satisfactory, although there have been reported instances of more than 70 percent (12:172). Shop chiefs had the lowest return rate at 42 percent. This was significantly lower than the 68 percent response rate of the next lowest subgroup. This might indicate that many shop chiefs were too busy with their normal duties to respond to a less than "top" priority. Table 2 provides the complete breakdown of survey responses.

Table 2
SURVEY RESPONSES BY SUBGROUP

Subgroup	Number of Responses	Percent Responding
Shop Chiefs	21	42
Branch Chiefs	35	70
Maintenance Superintendents	34	68
Subtotal for NCOs	90	60
Maintenance Supervisors	41	82
Squadron Commanders	39	78
DCMs/Assistant DCMs	40	80
Subtotal for Officers	120	80
Survey Total	210	70

Demographics

Frequency distributions were compiled on the first eight questions to provide a demographic profile of the respondents. Tables 3 through 10 present demographic information in each area.

Table 3
RANK BREAKDOWN

Rank	Frequency	Percent of Group*
Amn - TSgt	9	10.0
MSgt - SMSgt	53	58.9
CMSgt	28	31.1
Capt - Maj	59	49.2
LtCol - Col	61	50.8
*Group refers to NCOs or officers.		

Table 4
DUTY POSITION BREAKDOWN

Position	Frequency	Percent of Group*
<u>NCOs</u>		
Shop Chief	21	23.3
Branch Chief	35	38.9
Maintenance Superintendent	34	<u>37.8</u> 100.0
<u>Officers</u>		
Maintenance Supervisor	42	35.0
Squadron Commander	38	31.7
DCM/Assistant DCM	40	<u>33.3</u> 100.0
*Group refers to NCOs or officers.		

Table 5
LENGTH OF TIME IN THE AIR FORCE

Years (t) in the AF	Number of NCOs	Percent of NCOs	Number of Officers	Percent of Officers
t < 5	0	0.0	1	0.8
5 <= t < 10	2	2.2	11	9.2
10 <= t < 15	15	16.7	22	18.3
15 <= t < 20	29	32.2	43	35.8
20 <= t < 25	25	27.8	40	33.3
25 <= t	19	21.1	3	2.5

Table 6

LENGTH OF TIME IN AIRCRAFT MAINTENANCE

Years (t) in Maintenance	Number of NCOs	Percent of NCOs	Number of Officers	Percent of Officers
t < 3	1	1.1	20	16.7
3 <= t < 6	3	3.3	28	23.3
6 <= t < 9	2	2.2	21	17.5
9 <= t < 12	8	8.9	16	13.3
12 <= t	76	84.4	35	29.2

Table 7

LENGTH OF TIME IN SAC

Years (t) in SAC	Number of NCOs	Percent of NCOs	Number of Officers	Percent of Officers
t < 3	18	20.0	16	13.3
3 <= t < 6	15	16.7	10	8.3
6 <= t < 9	20	22.2	12	10.0
9 <= t < 12	17	18.9	18	15.0
12 <= t	20	22.2	64	53.3

Table 8

LENGTH OF TIME IN PRESENT DUTY POSITION

Number of Months in Job	Number of NCOs	Percent of NCOs	Number of Officers	Percent of Officers
t < 6	5	5.6	16	13.3
6 <= t < 12	6	6.7	20	16.7
12 <= t < 18	17	18.9	21	17.5
18 <= t < 24	15	16.7	16	13.3
24 <= t < 36	11	12.2	16	13.3
36 <= t	36	40.0	31	25.8

Table 9

BREAKDOWN OF OFFICERS BY AERONAUTICAL RATING

Category	Number	Percent
Rated	54	45
Not Rated	66	55

Table 10
BREAKDOWN OF OFFICERS BY PRIOR ENLISTED STATUS

Category	Number	Percent
No prior enlisted time	85	70.8
Less than 4 years enlisted time	13	10.9
4 or more years enlisted time	22	18.3

Rank. The majority (58.9 percent) of enlisted personnel were either master sergeants or senior master sergeants. Chief master sergeants comprised 31.1 percent of the enlisted respondents. There was no predominant rank group in the officers. There was almost an even split with captains and majors making up 49.2 percent while lieutenant colonels and colonels had 50.8 percent. Lieutenants were not part of the survey population since they comprise the vast majority of entry-level AMOs.

Air Force Longevity. The NCOs, as a group, had more time in the Air Force with 48.9 percent having 20 years or more service. This compared to 35.8 percent of the officers in the same range. Only 2.5 percent of the officers had 25 or more years service while 21.1 percent of the NCOs had that amount of time.

Maintenance Experience. The NCOs had much more aircraft maintenance time with 84.4 percent having 12 or more years experience. Only 29.2 percent of the officers

were in the 12 plus range, while 40 percent had less than 6 years aircraft maintenance experience. The imbalance in maintenance experience is understandable when you consider some other facts. Many enlisted members remain in their original AFSC throughout their careers. On the other hand, many aircraft maintenance officers (for example, 45 percent of those surveyed) have been pilots or navigators. These same officers become AMOs for a variety of reasons. Some spend time as an AMO to gain experience in managing and leading a large number of people and then return to operations. Others have medical problems which force them out of the cockpit. Many choose non-rated career fields after they have accumulated enough rated time to guarantee themselves flight pay even if they do not fly. Regardless of why rated officers become AMOs, they usually have less maintenance experience than career AMOs and NCOs.

Command Experience. Officers showed a greater command identity with 53.3 percent having 12 or more years in SAC compared to only 22.2 percent of the NCOs. A significant number (36.7 percent) of the NCOs had less than 6 years in SAC, while 21.6 percent of the officers fell in the same range. The difference between the officers' and NCOs' command identity may be due to the difference in their respective assignment processes. As previously mentioned, 45 percent of the AMOs surveyed were rated officers. Assignments for a rated officer are based on the officer's

weapon system identifier. If most of these rated AMOs were SAC air crew members, their chances of receiving multiple SAC assignments were greater than the enlisted maintenance technician's. Enlisted maintenance assignments are not necessarily linked to a particular weapon system and assignments in different commands are not uncommon.

Job Time. The NCOs tended to have more time than the officers in their respective duty positions. While 40 percent of the NCOs had 3 or more years experience in their present job, only 25.8 percent of the officers had equal time. Whereas 30 percent of the officers had less than 1 year in their job, the same was true for just 12.3 percent of the NCOs.

Analysis

The Statistical Package for the Social Sciences (SPSS) was used to aid in questionnaire analysis. The computer analysis procedures included frequency distributions, crosstabulations, and t-tests.

Frequency Distributions. Frequency distributions were prepared for all questions. Answers were compared to see whether or not a certain response was preferred by a particular group (NCOs or officers). Agreements and/or disagreements between groups were identified. Preferences for technical or administrative responses were also noted.

Crosstabulations. Crosstabulations provide a tabular breakdown of responses according to the subareas of a specified variable. For example, a crosstabulation by duty position for a question with a "yes or no" answer would generate a table with two columns (one for each response) and six rows (one for each duty position). The intersection of each row and column would contain the number of responses that met the conditions of that intersection (e.g. DCMs who answered "yes"). Crosstabulations were done on the following variables: rank, duty position, Air Force experience, maintenance experience, command experience, job experience, and aeronautical rating (for officers). The Chi Square statistic was used to determine any significant ($\alpha = .05$) differences in responses which were dependent upon one of the identified variables. Where variables were significant, both the Chi Square statistic and the associated p-value are listed in parentheses.

T-Tests. Hypothesis testing was done on Section 5 and Section 8 using the t statistic. The t value was computed using a pooled variance estimate. The computed p-value was a 2-tail probability. Responses to each question were analyzed to see if there was a significant difference between officers' answers and NCOs'. An alpha value of .05 was used to determine significance.

Section 2

The respondents were given a pair of activities (one technical, one administrative) for each question in this section. They were to choose the one they thought was more important for the entry-level aircraft maintenance officer to perform. The officers and NCOs generally agreed on the answers to questions in this section. The number of administrative and technical preferences were almost equal. Table 11 shows the breakdown of technical and administrative responses for Section 2.

Table 11
BREAKDOWN OF RESPONSES FOR SECTION 2

Question Number	Percent of NCOs		Percent of Officers	
	Admin	Tech	Admin	Tech
9	88.9	11.1	88.3	11.7
10	98.8	1.1	95.8	4.2
11	50.0	50.0	42.5	57.5
12	25.6	74.4	13.3	86.7
13	37.8	62.2	49.2	50.8

Question 9. The predominant answer (88.6 percent of all respondents) was "Ensuring availability of support equipment" (administrative). The NCOs' selection rate was 88.9 percent and the officers' was 88.3 percent. "Knowing

how to operate support equipment" (technical) was selected by 11.4 percent of the total (11.1 percent of NCOs, 11.7 percent of officers). These responses are consistent with the idea of a leader supporting his people in their work but not necessarily requiring the leader to do their work. Answers were independent of all tested variables. This means there was no significant difference in answers regardless of the variable by which they were grouped.

Question 10. There was overwhelming agreement on the relative importance of "Understanding subordinates' training requirements" (administrative) with 97.1 percent of all those surveyed choosing that response. The NCOs' selection rate was 98.9 percent and the officers' was 95.8. These responses are consistent with the idea of a leader ensuring his people are properly trained but not necessarily performing the training himself. Answers varied significantly by duty position (17.37, .0038) with only one branch chief and five DCMs/assistant DCMs selecting the alternate--"Training subordinates" (technical). It is possible these six persons viewed the term "subordinates" as "replacements" or "successors."

Question 11. Responses to this question were closely split. "Briefing safety requirements" (administrative) was selected by 50 percent of the NCOs, 42.5 percent of the officers, and 45.7 percent of the total. The second response ("Performing safety inspections" (technical)) was

chosen by 50 percent of the NCOs, 57.5 percent of the officers, and 54.3 percent of both groups. Answers varied significantly by level of SAC experience (10.78, .0290). Preference for the technical response increased by 10 percent between the 3 to 6 year mark. It dropped by 33.6 percent in the next interval. Persons who had between six and nine years in the command had a 65.6 percent selection rate for the administrative reply compared to a 45.7 percent overall rate. Between 9 and 12 years, the technical preference rose by 34.2 percent. Respondents with more than 12 years SAC time were evenly split on the technical and administrative choices. It might be that the primary duties the respondents were assigned had the emphasis selected.

Question 12. The majority (81.4 percent) of those surveyed selected "Learning technical issues of the aircraft system(s)" (technical) including 74.4 percent of the NCOs and 86.7 percent of the officers. Only 25.6 percent of the NCOs and 13.3 percent of the officers (18.6 percent of the total) chose "Learning the administrative duties of the job" (administrative). Answers varied significantly by rank (11.91, .0180). The master sergeant/senior master sergeant (MSgt/SMSgt) subgroup had a significantly lower (66 percent) selection rate for the technical response compared to the 86.6 percent overall rate of the other rank subgroups. This may indicate that this particular group would like the AMO to relieve some of the administrative burden. It might also

mean that MSgts and SMSgts would shoulder a disproportionate share of the administrative responsibilities in the absence of an administratively qualified officer.

Question 13. The NCOs showed a slight preference for the technical response on this question while the officers were evenly split. This may be a natural carryover from the fact NCOs were technicians before they became supervisors. "Resolving personnel problems" (administrative) was chosen by 37.8 percent of the NCOs, 49.2 percent of the officers, and 44.3 percent of the total. The alternate, "Resolving technical problems" (technical), was picked by 62.2 percent of the NCOs, 50.8 percent of the officers, and 55.7 percent of all respondents. There was no significant difference in answers regardless of the variable by which they were grouped.

Section 3

In this section of the questionnaire, the respondents were given multiple options and asked to select the answer that best represented their feelings about a particular question or statement. A majority of each group preferred the same general area (technical or administrative) for each question in ~~this~~ section. However, the officers' choices were more clearly defined than the NCOs'. The officers showed a clear preference for the technically oriented responses in two of the three questions. They preferred the

administratively oriented responses on the third. The NCOs' responses were somewhat less polarized. A large majority of the NCOs preferred the administrative answers to one question and the technical answers to another. The technical responses had a slight edge on the other question. Table 12 shows the breakdown of technical and administrative responses to Section 3.

Table 12
BREAKDOWN OF RESPONSES FOR SECTION 3

Question Number	Percent of NCOs		Percent of Officers	
	Admin	Tech	Admin	Tech
14	41.1	58.9	3.4	96.6
15	27.8	72.2	12.5	87.5
16	84.4	15.6	71.7	28.3

Question 14. The question was "What should be the primary function of a maintenance officer when deployed TDY?" Officers (95.8 percent) overwhelmingly agreed on "Supervise flight line work and determine maintenance work priorities" (technical). A majority (57.8 percent) of the NCOs also chose the same answer. Answers varied significantly by rank (57.47, <.0001) and duty position (66.67, <.0001). (It is logical to assume rank and duty position would go hand-in-hand. After all, a person must meet

certain rank requirements in order to qualify for most duty positions. In fact, the link between rank and duty position was very clear in this survey. While answers varied significantly by rank on 20 questions and by duty position on 21 questions, it varied by both on 15--almost 75 percent.) The MSgt/SMSgt group's selection rate for "Supervise flight line work and determine maintenance work priorities" was only 52.8 percent compared to an 88.5 percent average for all other ranks. Solidarity among officers caused the dependence on duty position. Overall, 79.5 percent of the respondents preferred this answer. This may indicate the importance of this task or the lack of importance given to the other options.

The second most frequent response was "Handle the paperwork requirements" (administrative) with 10.5 percent of the combined groups (22.2 percent--NCOs, 1.7 percent--officers (1 maintenance supervisor, 1 DCM)) choosing it. "Act as a figurehead without actually getting involved" (administrative) was preferred by 7.1 percent of the respondents (15.6 percent--NCOs, 0.8 percent--officers (1 squadron commander)). One squadron commander (0.8 percent--officers) and three maintenance superintendents (3.3 percent--NCOs) chose "Schedule duty hours for maintenance personnel" (administrative). One maintenance supervisor (0.8 percent--officers) and one branch chief (1.1 percent--NCOs) chose "Troubleshoot major aircraft system

malfunctions" (technical). Overall, 80.5 percent of both groups (58.9 percent--NCOs, 96.6 percent--officers) chose technical tasks while 19.5 percent (41.1 percent--NCOs, 3.4 percent--officers) chose administrative tasks.

Question 15. The top three answers to "On which one of the following should the maintenance officer concentrate supervisory checks?" were technical, with 39 percent of all respondents (37.8 percent--NCOs, 40 percent--officers) choosing "completed maintenance actions." The second place (30 percent--total, 21.1 percent--NCOs, 36.7 percent--officers) response was "in-process maintenance actions." "Launching aircraft" was third (11.9 percent--total, 13.3 percent--NCOs, 10.8 percent--officers). Administrative replies were less popular. Fourth place (10 percent--NCOs, officers, and total) went to "personnel training currency." "Reports and APRs" was fifth (8.6 percent--total, 16.7 percent--NCOs, 2.5 percent--officers) and "appearance of personnel" was sixth with only one shop chief (0.5 percent--total, 1.1 percent--NCOs) selecting it. Overall, 80.9 percent (72.2 percent--NCOs, 87.5 percent--officers) chose technical tasks and 19.1 percent (27.8 percent--NCOs, 12.5 percent--officers) chose administrative tasks--indicating a strong preference for a technically oriented AMO. As seen above, answers varied significantly by duty position (42.29, .0167).

Question 16. This question asked for the proper mixture of performing and/or understanding technical and administrative tasks. Answers to this question seemed to contradict those given on the previous question. They emphasized the administrative aspects of the job and not the technical. Perhaps performance of aircraft maintenance work was interpreted as actually "turning the wrenches."

The NCOs' first and second choices were the officers' second and first selections, respectively. Both groups agreed on the third and fourth place answers. The officers' answers varied significantly by aeronautical rating (9.79, .0204). Rated (40.7 percent) and non-rated (45.4 percent) officers agreed only on the first choice, "Perform administrative work and understand aircraft maintenance work," which was rated first by 41.9 percent of all respondents (40 percent--NCOs, 43.3 percent--officers).

"Understand administrative work and understand aircraft maintenance work" was second with 35.2 percent of the total (44.4 percent--NCOs, 28.3 percent--officers). It was also second with rated officers (33.3 percent)--but third with non-rated officers (24.2 percent). The non-rated officers' (25.8 percent) second choice, "Perform aircraft maintenance work and perform administrative work," was third overall (14.8 percent--total, 10 percent--NCOs, 18.3 percent--officers), and came in fourth with rated officers (9.3 percent). Only 8.1 percent of both groups (5.6 percent--

NCOs, 10 percent--officers) chose the fourth place answer, "Perform aircraft maintenance work and understand administrative work." Non-rated officers (4.5 percent) also had it fourth, while rated officers (16.7 percent) placed it third.

Section 4

This section of the survey instrument was divided into five areas. Four of the areas were groups of four duties for an entry-level aircraft maintenance officer. The respondents were asked to rank order the four duties from most important to least important. An average ranking was used to determine the order of importance. In three of the four areas, the officers and NCOs rated the same technical task as most important. In the fourth area, both groups rated the same administrative task as most important.

The fifth area asked the participants to rank in order of preference six experiences/backgrounds for AMOs. This area was used solely to determine if the officers' preferences agreed with the NCOs' and did not classify the experiences/backgrounds as technical or administrative. An average ranking was also used in this area. The number one preference was the only one on which the officers and NCOs always agreed. Table 13 and Table 14 present Section 4 results.

Table 13
BREAKDOWN OF RESULTS FOR SECTION 4

Group	Question Number	Category of Duty	Relative Importance		
			NCOs	Officers	Total
1	17	Technical	4	3	4
	18	Administrative	3	2	3
	19	Technical	1	1	1
	20	Administrative	2	4	2
2	21	Technical	4	3	4
	22	Technical	3	4	3
	23	Administrative	2	2	2
	24	Administrative	1	1	1
3	25	Technical	1	1	1
	26	Administrative	3	2	2
	27	Administrative	2	3	3
	28	Technical	4	4	4
4	29	Technical	1	1	1
	30	Administrative	3	4	4
	31	Technical	2	2	2
	32	Administrative	4	3	3
5	33	None	1	1	1
	34	None	2	3	3
	35	None	3	6	4
	36	None	4	2	2
	37	None	5	4	5
	38	None	6	5	6

Questions 17 - 20. Both officers and NCOs chose "Schedule maintenance activities" (technical) as being most important in this list of duties. The average rank score was 1.73 from NCOs, 1.58 from officers, and 1.65 overall. Ratings for this duty varied significantly by rank (21.69, .0411) and Air Force experience (33.46, .0040). The NCOs'

Table 14
AVERAGE RATING OF DUTIES IN SECTION 4

Group	Question Number	Category of Duty	Average Ranking		
			NCOs	Officers	Total
1	17	Technical	3.34	2.80	3.03
	18	Administrative	2.77	2.67	2.70
	19	Technical	1.73	1.58	1.65
	20	Administrative	2.16	2.95	2.61
2	21	Technical	3.28	3.14	3.20
	22	Technical	2.61	3.26	2.98
	23	Administrative	2.29	2.16	2.21
	24	Administrative	1.82	1.44	1.60
3	25	Technical	1.44	1.45	1.45
	26	Administrative	3.46	2.35	2.35
	27	Administrative	2.27	2.83	2.79
	28	Technical	3.46	3.38	3.41
4	29	Technical	1.58	1.23	1.38
	30	Administrative	2.82	3.23	3.06
	31	Technical	2.77	2.40	2.56
	32	Administrative	2.83	3.14	3.01

preference for this response increased as rank increased while the officers' remained the same. This may indicate NCOs and officers eventually gain the same perspective on this duty. Preference for this answer also increased as Air Force longevity increased.

The two groups disagreed on the order of importance for the other three duties. The NCOs gave "Attend meetings" (administrative) second place with an average of 2.16 while the officers put it fourth with a 2.95 average rating. Attending meetings may be a task neither group enjoys.

Therefore, it may be more convenient for each group to view that task as belonging to the other and not their own. The combined average score was 2.61, which made it second. Ratings for "Attend meetings" varied significantly by rank (39.85, .0001), duty position (44.61, .0001), and aircraft maintenance experience (21.97, .0378). This duty was rated less important as rank and duty position increased. Persons with less than 12 years maintenance experience also scored this duty as relatively unimportant. However, respondents with 12 or more years maintenance time seemed somewhat undecided about the importance of attending meetings and rated it almost evenly from first to fourth.

The NCOs' third choice of the AMO's duties was "Write/edit APRs, reports, etc." (administrative) at a 2.77 average. This same duty was rated second by the officers with a 2.67 average rating. Writing/editing received the overall third place and had a 2.70 average combined score. The last duty on the NCOs' priority list was "Troubleshoot aircraft maintenance problems" (technical) which averaged 3.34. It was last overall with a 3.03 combined score. Officers rated this duty third with a 2.80 average. The small difference in means (0.28) between the officers' first and last choices may indicate none of these duties were considered important--or, more likely, all of them were considered nearly equal in importance.

Questions 21 - 24. In this section of the questionnaire officers and NCOs agreed on their choices for the most important duty--"Ensure availability of proper tools and equipment" (administrative). The overall mean was 1.60 with NCOs at 1.82 and officers at 1.44. Ratings varied significantly by rank (28.98, .0040) and duty position (26.38, .0342). The MSgt/SMSgt subgroup (1.98) and the branch chief subgroup (2.03) rated this duty relatively less important than the other subgroups rated it, although they still scored it first. The results for the MSgt/SMSgt and branch chief subgroups were less clearly defined than those of the other subgroups. The difference between the average first place score and the average third place score was 0.57 for the MSgt/SMSgt subgroup and 0.43 for the branch chief subgroup. One possible explanation is they viewed all three duties as being equally important. Officers and NCOs selected "Monitor training status" (administrative) as the second priority with a combined average rank of 2.21 (2.29 for NCOs, 2.16 for officers).

There was significant disagreement on the two least important duties. Officers rated "Perform Quality Assurance inspections on work" (technical) third (3.14) and "Answer Quality Assurance reports" fourth (3.26). The NCOs had the latter duty third (2.61) and the former one fourth (3.28). The overall ratings were consistent with the NCOs'.

Answering reports was third with a 2.98 mean and performing inspections placed fourth with a 3.20 average. Ratings for "Answer Quality Assurance reports" varied significantly by rank (50.67, <.0001)--as noted above, duty position (48.34, <.0001), aircraft maintenance experience (21.43, .0444), and SAC experience (26.86, .0081). The relative importance of this duty decreased as duty position and SAC experience increased, but increased as experience in aircraft maintenance increased.

Questions 25 - 28. Both officers and NCOs agreed "Evaluate maintenance data reports" (technical) was most important (1.44--NCOs, 1.45--officers and total) and "Perform simple maintenance tasks" (technical) was least important (3.46--NCOs, 3.38--officers, 3.41--total). Ratings for the latter duty varied significantly by the individual's SAC experience (23.69, .0224). Persons with between 6 and 12 years SAC experience rated performance of simple maintenance tasks significantly lower than did persons with other levels of SAC experience.

"Administer recognition programs" (administrative) was ranked second by both officers and overall at a 2.35 average. However, NCOs rated it third (3.46). Ratings varied significantly by the level of experience respondents had in their current duty positions (25.01, .0390). Individuals who had 24 to 36 months experience in their present jobs gave this duty more importance than did

individuals with other amounts of job tenure. Officers placed "Prepare assorted paperwork" (administrative) third (2.83) compared to the NCOs' second (2.27). The latter duty was third overall (2.79).

Questions 29 - 32. Agreement was evident on the top two priorities. "Direct maintenance activities" (technical) was rated first--1.58 by NCOs, 1.23 by officers, and 1.38 overall. Ratings varied significantly by rank (26.83, .0081), duty position (33.37, .0042), and (for officers only) aeronautical rating (8.57, .0356). Chief master sergeants, DCMs, and non-rated officers rated this duty significantly more important than did any of the other respective subgroups. Perhaps these three subgroups had a perspective the others did not have.

Second place went to "Provide personal technical expertise to superiors" (technical) with average ratings of 2.77 by NCOs, 2.40 by officers, and 2.56 by the combined groups. "Direct administrative activities" (administrative) scored third with officers (3.14) and overall (3.01), but fourth with NCOs (2.83). Ratings for this duty varied significantly by rank (21.82, .0396). The relative importance of this activity decreased as NCO rank increased, but increased slightly as officer rank increased. This may mean the NCOs are willing to assume responsibility for more administrative chores as they move up the chain of command

while the officers become increasingly dependent on the AMO to help relieve their administrative workload.

The groups also disagreed when they rated "Provide personal administrative expertise to superiors" (administrative) which was fourth overall with a 3.06 average. Officers rated it fourth (3.23) while NCOs ranked it third (2.82). Ratings for the latter duty varied significantly by rank (23.88, .0211) and duty position (29.02, .0160). The NCOs rated this task less important as their rank increased. The relative importance of this activity also decreased as the duty position increased. The latter observation is not surprising since persons in the higher duty positions normally have administrative personnel assigned to their offices.

Questions 33 - 38. "Prior enlisted aircraft maintenance" was the number one preference for both groups with an overall score of 1.65 (1.46--NCOs, 1.80--officers). There was no significant difference in ratings for this option regardless of the variable by which they were grouped. Second preferences were more parochial. "Prior officer air crew member" was second overall (3.48) and for officers (3.16). However, NCOs rated it fourth (3.83). Scores for this last option varied significantly by rank (47.22, .0005), Air Force experience (38.07, .0454), and aeronautical rating of officers (12.79, .0253). Lieutenant colonels and colonels scored "prior officer air crew member"

higher (2.56) than the average (3.90) it earned from the remaining rank subgroups. Individuals with 5 to 15 years Air Force experience rated this option lower (3.96) than the average (3.41) obtained from respondent's with other levels of Air Force experience. Rated officers ranked their flying experience higher (2.67) than did the non-rated officers (3.56).

Officers (3.63) agreed with the overall (3.46) third choice--"Prior enlisted air crew member." However, the NCOs placed this alternative second (3.23). Ratings for this option varied significantly by rank (31.51, .0488). The MSgt/SMSgt subgroup rated this choice higher (2.92) than the average (3.60) it earned from the other rank subgroups. "Prior enlisted other" was ranked fourth overall (4.01), third by NCOs (3.54), and sixth by officers (4.37). These ratings varied significantly by rank (56.67, <.0001), duty position (56.13, .0003), and aircraft maintenance experience (36.97, .0118). Lieutenant colonels and colonels gave "prior enlisted other" a lower preference (4.85) than it averaged (3.55) with the remaining rank subgroups. Squadron commanders (4.42) and DCMs (4.85) scored it lower than the average (3.63) it received from the other duty position subgroups. Preference for this experience increased as the level of aircraft maintenance experience increased--which is not unusual since the ratio of enlisted to officer also increased with maintenance experience.

Fifth place for the combined groups went to "Officer cross-trainee (non-air crew)" with an average score of 4.17. The officers rated this choice fourth (3.96) while the NCOs put it fifth (4.44). Scores for the officer cross-trainee varied significantly by rank (31.87, .0447) and duty position (38.14, .0448). The mean rating for technical sergeants and below (3.78) was almost identical to the mean for lieutenant colonels and colonels (3.79). Each of these subgroups rated it higher than the average (4.36) it received from the other three rank subgroups. "No prior experience necessary" placed last with the NCOs (4.49) and overall (4.25) but fifth with the officers (4.07). There was no significant difference in ratings for this selection regardless of the variable by which they were grouped.

Section 5

This section contained 10 statements describing the duties of an entry-level aircraft maintenance officer. Respondents used a 5-point Likert scale to show the extent to which they agreed or disagreed with each statement. The scale and corresponding numerical values are given below.

1	2	3	4	5
Strongly agree	Slightly agree	Neither agree nor disagree	Slightly disagree	Strongly disagree

The t statistic was used to determine significant differences (alpha = .05) in responses between NCOs and officers. Analysis of this section showed significant differences in

responses between the officers and the NCOs in 7 of the 10 questions. Table 15 and Table 16 show the statistical breakdowns for each question.

Table 15
T-TEST RESULTS FOR SECTION 5

Question Number	NCOs		Officers		t Value	p Value
	Mean	Std Dev	Mean	Std Dev		
39	2.6333	1.361	3.2417	1.277	3.32	.001
40	3.5333	1.342	3.9667	0.978	2.71	.007
41	2.3000	1.222	1.6417	0.838	-4.63	.000
42	2.8222	1.329	2.5167	1.174	-1.76	.079
43	1.8778	1.110	1.9000	0.956	0.16	.877
44	3.7778	1.120	3.7583	0.917	-0.14	.890
45	3.4333	1.132	3.0583	1.125	-2.38	.018
46	4.1111	1.065	4.5250	0.756	3.29	.001
47	2.3667	1.258	2.7083	1.212	1.99	.048
48	2.0444	1.170	1.6667	0.873	-2.68	.008

Question 39. "A maintenance officer should concentrate on handling technical problems more than people problems." Although both means were near the middle, the majority of officers disagreed with this statement (52.5 percent either slightly or strongly disagreed) while the majority of NCOs

Table 16

BREAKDOWN OF RESPONSES FOR SECTION 5

Question Number	Response Category	Selection Rate by Percent	
		NCOs	Officers
39	Strongly agree	24.5	8.3
	Slightly agree	31.1	29.2
	Neither agree nor disagree	13.3	10.0
	Slightly disagree	18.9	35.0
	Strongly disagree	12.2	17.5
40	Strongly agree	10.0	0.8
	Slightly agree	17.8	9.2
	Neither agree nor disagree	10.0	16.6
	Slightly disagree	33.3	39.2
	Strongly disagree	28.9	34.2
41	Strongly agree	28.9	53.4
	Slightly agree	40.0	35.0
	Neither agree nor disagree	10.0	5.8
	Slightly disagree	14.4	5.8
	Strongly disagree	6.7	0.0
42	Strongly agree	22.2	24.2
	Slightly agree	18.9	29.1
	Neither agree nor disagree	25.6	20.0
	Slightly disagree	21.1	24.2
	Strongly disagree	12.2	2.5
43	Strongly agree	50.0	42.5
	Slightly agree	25.6	31.7
	Neither agree nor disagree	15.6	20.8
	Slightly disagree	4.4	3.3
	Strongly disagree	4.4	1.7

Table 16--Continued

Question Number	Response Category	Selection Rate by Percent	
		NCOs	Officers
44	Strongly agree	3.3	0.0
	Slightly agree	12.2	9.2
	Neither agree		
	nor disagree	18.9	28.3
	Slightly disagree	34.5	40.8
	Strongly disagree	31.1	21.7
45	Strongly agree	6.7	9.2
	Slightly agree	12.2	25.0
	Neither agree		
	nor disagree	31.1	24.1
	Slightly disagree	31.1	34.2
	Strongly disagree	18.9	7.5
46	Strongly agree	5.6	0.0
	Slightly agree	3.3	3.3
	Neither agree		
	nor disagree	7.8	5.0
	Slightly disagree	41.1	28.3
	Strongly disagree	42.2	63.4
47	Strongly agree	30.0	17.5
	Slightly agree	31.1	30.8
	Neither agree		
	nor disagree	20.0	23.4
	Slightly disagree	10.0	20.0
	Strongly disagree	8.9	8.3
48	Strongly agree	40.0	50.8
	Slightly agree	35.6	40.0
	Neither agree		
	nor disagree	10.0	1.7
	Slightly disagree	8.9	6.7
	Strongly disagree	5.5	0.8

agreed with it (55.6 percent either slightly or strongly agreed). Responses varied significantly by duty position (32.95, .0341). Shop chiefs, branch chiefs, and maintenance superintendents showed slight agreement with this statement.

Maintenance supervisors neither agreed nor disagreed with it. On the other hand, squadron commanders and DCMs showed slight disagreement.

Question 40. "A maintenance officer should understand administrative procedures better than technical information (i.e. aircraft systems)." Both groups leaned toward disagreement with this remark. The officers' degree of disagreement (34.2 percent "strongly disagreed") was similar to the NCOs' (28.9 percent "strongly disagreed"). Ratings varied significantly by rank (27.33, .0379). The MSgt/SMSgt subgroup tended to neither agree nor disagree with this statement with a 3.26 average rating.

Question 41. "A maintenance officer should spend more time supervising maintenance activities than doing paper work." The NCOs showed slight agreement (28.9 percent chose "strongly agree", 40 percent chose "slightly agree") with this statement while the officers agreed more strongly (53.4 percent chose "strongly agree", 35 percent chose "slightly agree"). Answers varied significantly by duty position (39.30, .0061) and rank (34.85, .0042). The captain/major (55.9 percent "strongly agreed") and maintenance supervisor (59.5 percent "strongly agreed") subgroups demonstrated the strongest agreement with this opinion. The MSgt/SMSgt (26.4 percent disagreed) and branch chief (31.4 percent disagreed) subgroups showed the least amount of agreement. Perhaps they felt this type of imbalance for the AMO would force

them to bear a disproportionate share of the administrative duties.

Question 42. "A maintenance officer should develop new maintenance techniques rather than develop new administrative policies." The means for officers and NCOs were just inside the agree area. Although the means were not significantly different, 53.3 percent of the officers agreed with this statement compared to 41.1 percent of the NCOs. Responses to this question varied significantly by the length of time respondents had served in their current duty positions (31.98, .0435). Individuals who had 36 or more months tenure in their duty positions were more apt to "strongly agree" with this remark--34.3 percent actually did compared to an average of 17.9 percent for the remaining subgroups. Perhaps these respondents gained a perspective not available to persons who had less experience in their jobs.

Question 43. "A maintenance officer should demonstrate technical competence by briefing aircraft status instead of speaking at ceremonial events (i.e. banquets, tours)." Both groups slightly agreed with this position. Ratings varied significantly by duty position (33.20, .0320). The majority of maintenance supervisors (59.5 percent) and maintenance superintendents (61.8 percent) "strongly agreed" with this statement.

Question 44. "A maintenance officer should concentrate on writing administrative reports (APRs, awards and decorations) instead of technical reports (QA reports, MOIs)." Slight disagreement with this statement was evident in both groups. There was no significant difference in replies regardless of the variable by which they were grouped.

Question 45. "A maintenance officer should handle people problems better than technical problems." Officers neither agreed nor disagreed with this opinion while NCOs showed a somewhat slight disagreement--possibly a result of their technical background. It might also mean the NCOs see themselves handling their people problems without having to involve the new AMO. Answers varied significantly by rank (29.81, .0190) and duty position (39.95, .0066). Three of the nine persons in the technical sergeant and below subgroup chose "slightly disagree" and four chose "strongly disagree." Shop chiefs (3.52), branch chiefs (3.26), maintenance superintendents (3.56), and maintenance supervisors (3.29) leaned toward slight disagreement. Squadron commanders (2.97) and DCMs (2.90) neither agreed nor disagreed.

Question 46. "The primary function of a maintenance officer is to look after the morale of personnel and handle duties like CFC instead of managing maintenance actions." This statement contradicts the description of the AMO's duties and responsibilities found in AFR 36-1. The author

anticipated strong disagreement with this statement from both groups. However, this did not occur.

The NCOs slightly disagreed with this idea while the officers disagreed even more. Responses varied significantly by duty position (40.66, .0249) and rank (35.10, .0196). Maintenance supervisors and technical sergeants (and below) were the only subgroups to show total disagreement with this remark--100 percent either slightly or strongly disagreed. In fact, maintenance supervisors disagreed the strongest--76.2 percent chose "strongly disagree."

Responses from the MSgt/SMSGt subgroup skewed the NCOs' overall opinion. The majority (50.9 percent) of this subgroup selected "slightly disagree" whereas 59.5 percent of the other NCOs chose "strongly disagree." Additionally, 11.3 percent of the MSgt/SMSGt subgroup agreed with this statement. The captain/major subgroup voiced the strongest disagreement with 72.9 percent selecting "strongly disagree."

Question 47. "A maintenance officer should be a contact point for flying operations and upper maintenance management instead of acting as a technical advisor to these people." The officers were barely committed to any level of agreement with this statement--48.3 percent agreed. On the other hand, 61.1 percent of the NCOs agreed with it. There

was no significant difference in ratings regardless of the variable by which they were grouped.

Question 48. "A maintenance officer is principally responsible for maintenance activities instead of administrative activities." Whereas NCOs slightly agreed with this position, officers showed even stronger agreement. Overall, the groups' responses to this statement were consistent with their answers to Question 46--including the 15.1 percent of MSgt/SMSgt subgroup who agreed with this statement. There was no statistically significant difference (at alpha = .05) in replies regardless of the variable by which they were grouped. However, crosstabulation of the responses by rank showed a p-value of .0539, which can be directly attributed to the responses provided by the MSgt/SMSgt subgroup.

Section 6

In this section of the survey instrument, participants were asked to rate each activity as being either important or not important for a maintenance officer to accomplish prior to being upgraded to the fully qualified AFSC. In short, it asked them to identify skills that they considered as being important for AMOs. Overall, officers and NCOs basically agreed with each other in this section. Neither the officers nor the NCOs showed a clear preference for either technical or administrative tasks. Table 17 shows a breakdown of responses for Section 6.

Table 17
BREAKDOWN OF RESPONSES FOR SECTION 6

Question Number	Activity Category	Important Percent of		Not Important Percent of	
		NCOs	Officers	NCOs	Officers
49	Tech	28.9	30.0	71.1	70.0
50	Tech	21.1	34.2	78.9	65.8
51	Admin	77.8	90.0	22.2	10.0
52	Tech	53.3	42.5	46.7	57.5
53	Admin	94.4	92.5	5.6	7.5
54	Admin	58.9	59.2	41.1	40.8
55	Tech	82.2	87.5	17.8	12.5
56	Tech	80.0	93.3	20.0	6.7
57	Admin	55.6	67.5	44.4	32.5
58	Admin	56.7	66.7	43.3	33.3
59	Tech	77.8	95.0	22.2	5.0

Question 49. "Operate support equipment (power units, light carts)" received virtually the same response from both groups. A large majority (71.1 percent--NCOs, 70 percent--officers, 70.5 percent--total) felt this task was not important for upgrade. Nonetheless, a small portion (28.9 percent--NCOs, 30 percent--officers, 29.5 percent--total) believed it was. This might indicate that a majority in each group does not expect the AMO to actually "turn the

wrenches." There was no significant difference in answers regardless of the variable by which they were grouped.

Question 50. A majority (71.4 percent) of the total said "Perform simple maintenance tasks (marshalling, refueling)" was not important for upgrade. More NCOs (78.9 percent) than officers (65.8 percent) rated it as such. Meanwhile, 28.6 percent of both groups (21.1 percent--NCOs, 34.2 percent--officers) claimed it was important. Replies varied significantly by rank (13.71, .0083), duty position (13.86, .0165), and Air Force experience (15.14, .0097). The importance of this task increased as rank, duty position, and Air Force experience increased--a fact new AMOs might note for the future.

Question 51. Whereas 90 percent of the officers considered "Complete an academic technical course on the assigned weapon system" important for upgrade, the same was true for 77.8 percent of the NCOs (84.8 percent overall). It seems that both groups want an AMO who has a fundamental knowledge of the aircraft and its systems. Only 15.2 percent of the total (10 percent--officers, 22.2 percent--NCOs) felt this activity was unimportant. There was no significant difference in responses regardless of the variable by which they were grouped.

Question 52. The two groups differed slightly in their opinions on "Complete a hands-on technical course on the assigned weapon system." A slight majority (53.3 percent)

of the NCOs agreed with a minority (42.5 percent) of the officers when they rated it important. This topic was rated as important by 47.1 percent of the combined groups. Overall, a slight majority (52.9 percent) considered the hands-on training unimportant. This included 46.7 percent of the NCOs and 57.5 percent of the officers. These responses may indicate NCOs have a slight preference for AMOs who have actually "worked with" a weapon system while officers do not believe such training should be required for upgrade. There was no significant difference in answers regardless of the variable by which they were grouped.

Question 53. An overwhelming number (94.4 percent--NCOs, 92.5 percent--officers, 93.3 percent--total) agreed on the importance of "Complete a supervisor's course." Only 6.7 percent of the two groups (5.6 percent--NCOs, 7.5 percent--officers) disagreed. Responses varied significantly by level of Air Force experience (16.90, .0047). Individuals who had served 10 or more years in the Air Force viewed this activity as being more important than did persons with less than 10 years Air Force experience.

Question 54. Opinions on "Complete an effective writing course" were nearly identical in both groups. Overall, 59 percent (58.9 percent--NCOs, 59.2 percent--officers) said it was important for upgrade while 41 percent (41.1 percent--NCOs, 40.8 percent--officers) claimed it was not important. There was no significant difference in

replies regardless of the variable by which they were grouped. Both groups seemed to agree it was important for an AMO to have good written communication skills and may see an effective writing course as a way of achieving this.

Question 55. "Be experienced at coordinating flight line launch activities" was considered important by 82.2 percent of the NCOs, 87.5 percent of the officers, and 85.2 percent of the total. Only 14.8 percent of those surveyed (17.8 percent--NCOs, 12.5 percent--officers) felt this activity was unimportant. There was no significant difference in ratings regardless of the variable by which they were grouped.

Question 56. A majority (87.6 percent) of respondents believed it was important for an aircraft maintenance officer to "Understand and use the Technical Order system and relevant Technical Orders" prior to being upgraded to the fully qualified AFSC. This included 80 percent of the NCOs and 93.3 percent of the officers. Only a small portion (20 percent--NCOs, 6.7 percent--officers, 12.4 percent--total) believed this task was not important. Opinions varied significantly by duty position (12.54, .0280) and rank (17.34, .0017). Branch chiefs were well below the overall average with only 74.3 percent saying it was important and DCMs were well above the mean at 97.5 percent. The MSgt/SMSGt subgroup had 71.7 percent--the lowest of all rank subgroups--claim the task was important. This differed

considerably with the technical sergeant and below subgroup where 100 percent said it was important. It is understandable that the latter subgroup would view proper use of Technical Orders as important. They are reminded daily of this fact. Proper use of technical data is stressed as "the party line." Persons who violate technical data are usually reprimanded in one manner or another.

Question 57. Although a majority of each group (62.4 percent of the total) felt it was necessary for a maintenance officer to "Understand in detail how the supply system works," the officers (67.5 percent) were more inclined than the NCOs (55.6 percent) to say it was important. More NCOs (44.4 percent) than officers (32.5 percent) considered this activity unimportant. This may indicate the officers had a better appreciation for the interaction between maintenance and supply than did the NCOs. Answers varied significantly by the individual's SAC experience (9.60, .0477). The majority (59.4 percent) of individuals who had served between six and nine years in SAC said this task was not important. This was the opposite of what individuals with other levels of SAC experience claimed--an average of 65.9 percent said it was important.

Question 58. The overall ratings for "Have an in-depth knowledge of aircraft scheduling" were identical to those for the latter question (62.4 percent--important, 37.6 percent--not important). There was only a slight change in

the individual groups with 56.7 percent of NCOs and 66.7 percent of officers claiming it was important. There was no significant difference in responses regardless of the variable by which they were grouped.

Question 59. Even though 87.6 percent of those surveyed rated "Know how to properly document aircraft forms" important, the officers (95 percent) were more united than the NCOs (77.8 percent). This means only 5 percent of the officers but 22.2 percent of the NCOs (12.4 percent--overall) felt documenting aircraft forms was not important task training prior to upgrade. Replies varied significantly by rank (22.77, .0001) and duty position (20.65, .0009). The MSgt/SMSGt subgroup had 69.8 percent score the activity important while the captain/major subgroup had 98.3 percent do the same. The most significant differences were found between duty positions. Branch chiefs and maintenance supervisors (68.6 percent and 100 percent, respectively) claimed form documentation was important.

Section 7

This section of the survey instrument dealt with the aircraft maintenance officer's academic education and training. The respondents were asked to select the one answer that best represented their feelings. This section was used solely to determine if the officers' preferences agreed with the NCOs' and did not classify the answers as

technical or administrative. Overall, there were no significant differences in responses between the officers and NCOs. Table 18 presents a breakdown of Section 7 results.

Table 18
BREAKDOWN OF RESPONSES FOR SECTION 7

Question Number	Answer	Selection Rate by Percent	
		NCOs	Officers
60	A	23.3	28.3
	B	55.6	36.7
	C	1.1	0.8
	D	20.0	34.2
61	A	60.0	61.7
	B	4.5	0.0
	C	20.0	19.2
	D	2.2	2.5
	E	13.3	16.7

Question 60. The groups gave somewhat parallel answers to "What academic education produces better maintenance officers?" A majority (55.6 percent) of the NCOs said "Engineering/Science/Technical" while 36.7 percent of the officers agreed. This response received the number one vote

from 44.8 percent of the total. The second choice overall (28.1 percent) was "Academic education is not important." More officers (34.2 percent) than NCOs (20 percent) chose this answer. The NCOs second choice (23.3 percent), "Administrative/Business/Management," was third with officers (28.3 percent) and overall (26.2 percent). "Liberal Arts (Music, Art, History, etc.)" was last (1.1 percent--NCOs, 0.8 percent--officers, 1 percent--total). There was no significant difference in answers regardless of the variable by which they were grouped.

Question 61. "General aircraft systems course" was the agreed upon answer to "Which of the following types of training is most important for a maintenance officer?" The selection rates were 60 percent for NCOs, 61.7 percent for officers, and 61 percent overall. The number two choice was "In-depth technical training on the assigned weapon system" (20 percent--NCOs, 19.2 percent--officers, 19.5 percent--total). The third most popular response (13.3 percent--NCOs, 16.7 percent--officers, 15.2 percent--overall) was "Formal management training." "Training on Air Force and Command Regulations" placed fourth with officers (2.5 percent) and overall (2.4 percent), but last with NCOs (2.2 percent). The NCOs fourth choice (4.5 percent) was a "Report writing and briefing course," (usually considered a function of Professional Military Education courses) which was last overall (1.9 percent). In fact, no officers chose

this answer. There was no significant difference in responses regardless of the variable by which they were grouped.

Section 8

This section of the survey contained four questions regarding the abilities and characteristics of an entry-level aircraft maintenance officer. Respondents used a 5-point Likert scale to show the extent to which they agreed or disagreed with each statement. The scale and corresponding numerical values are given below.

1	2	3	4	5
Highly technically oriented		Equally technically and administratively oriented		Highly adminis- tratively oriented

The t statistic was used to determine significant differences ($\alpha = .05$) in responses between NCOs and officers. Overall analysis of this section showed no difference in responses between the officers and the NCOs. Table 19 and Table 20 show statistical breakdowns for each question.

Table 19
T-TEST RESULTS FOR SECTION 8

Question Number	NCOs		Officers		t Value	p Value
	Mean	Std Dev	Mean	Std Dev		
62	2.6222	0.829	2.5583	0.742	-0.59	0.558
63	4.0889	1.519	3.7917	1.629	-1.35	0.180
64	2.9667	1.106	2.7583	0.830	-1.56	0.120
65	2.6778	0.762	2.6417	0.605	-0.38	0.702

Question 62. The respondents were asked to describe the best aircraft maintenance officer they ever knew. A majority of both groups (54.4 percent--NCOs, 58.3 percent--officers) said the best AMOs were equally technically and administratively oriented. However, more than one fourth of the officers and NCOs agreed that the best ones were somewhat more technically oriented than administratively oriented. There was no significant difference in replies regardless of the variable by which they were grouped.

Question 63. This question asked the respondents to describe the worst aircraft maintenance officer they ever knew. Once again the officers and NCOs were in agreement. Overall, both groups said the worst ones were more administratively oriented than technically oriented. A majority of both groups (67.8 percent--NCOs, 56.7 percent--officers) agreed that the worst AMOs were highly administratively

Table 20
BREAKDOWN OF RESPONSES FOR SECTION 8

Question Number	Response Category	Selection Rate by Percent	
		NCOs	Officers
62	Highly tech	10.0	10.8
	Technical	27.8	26.7
	Equal Tech/Admin	54.4	58.3
	Administrative	5.6	4.2
	Highly admin	2.2	0.0
63	Highly tech	15.6	20.8
	Technical	4.4	4.2
	Equal Tech/Admin	3.3	6.7
	Administrative	8.9	11.6
	Highly admin	67.8	56.7
64	Highly tech	8.9	6.7
	Technical	23.3	26.6
	Equal Tech/Admin	42.2	53.4
	Administrative	13.4	10.8
	Highly admin	12.2	2.5
65	Highly tech	5.6	3.3
	Technical	30.0	32.5
	Equal Tech/Admin	58.8	60.9
	Administrative	2.3	3.3
	Highly admin	3.3	0.0

oriented. Some respondents also indicated that AMOs who were highly technically oriented were the worst ones they ever knew. Few respondents in either group claimed the worst AMO they ever knew was equally technically and administratively oriented. Perhaps this is an indication that a balance between the two extremes is a key to being a successful AMO. There was no significant difference in

answers regardless of the variable by which they were grouped.

Question 64. The respondents were asked to describe the maintenance officer with whom they worked. (If they worked with more than one, they were to describe the one who most stood out in their minds.) A large portion of the NCOs (42.2 percent) and a majority of the officers (53.4 percent) said the maintenance officers who worked with them were equally technically and administratively oriented. The next most frequent response (23.3 percent--NCOs, 26.6 percent--officers) said the AMO was somewhat more technically oriented than administratively oriented. Responses varied significantly by rank (26.34, .0493) and duty position (35.38, .0181). Individuals in the technical sergeant and below subgroup said the AMO was slightly more administratively oriented--perhaps they were comparing the AMO to themselves. As the duty positions increased, the degree of the AMO's technical orientation also increased.

Question 65. This question was the most directly focused question in the survey. It asked the respondents to describe how the ideal AMO should be oriented. The answer from each group was almost identical. A majority of each group (58.8 percent--NCOs, 60.9 percent--officers) said the ideal AMO should be equally technically and administratively oriented. The next most popular response (30 percent--NCOs, 32.5 percent--officers) claimed the ideal AMO should be

somewhat more technically than administratively oriented. Overall, more than 94 percent of the respondents in each group maintained the ideal AMO should be either equally oriented or more technically than administratively oriented. There was no significant difference in answers regardless of the variable by which they were grouped.

Summary

Although it was impossible to directly compare the results of one section to those of another, some general observations were still possible. A summary table of the respondents' preferences was constructed by conservatively evaluating applicable sections of the survey instrument. The summary tables for each major section of the questionnaire--Tables 11, 12, 13, 14, and 16--were reviewed. A 70 percent or higher majority selection rate was used to identify technical and administrative preferences for Section 2 and Section 3. In those instances where selection rates were 60/40 or closer, the two choices were considered equally important. Response rates outside these qualifications were not counted. The same 70 percent or higher criterion was used for Section 6. However, only the positive preferences (those activities which were rated important) were counted. No inferences were made from negative responses (those activities which were rated unimportant). This means a technical task which was

considered unimportant by 70 percent or more of the respondents did not generate a tally for an administrative task and vice versa. For Section 4, only the number one preference in each group was counted. The minimum difference of 0.43 between the means for first and second choice was considered an adequate discriminator. Overall, the majority of officers and NCOs essentially shared the same preferences. Table 21 presents a summary of results.

Table 21
CONSERVATIVE SUMMARY OF PREFERENCES

Section	Group	Technical	Administrative	Both Equal
2	NCOs	1	2	1
	Officers	1	2	2
3	NCOs	1	1	1
	Officers	2	1	0
4	NCOs	3	1	N/A
	Officers	3	1	N/A
6	NCOs	3	2	N/A
	Officers	3	2	N/A
	Total	<u>17</u>	<u>10</u>	<u>4</u>

Although the results from Section 8 did not meet the strict requirements for the summary table, a few observations are still valid. The preference for an ideal AMO who was equally adept at administrative and technical activities aligns with the trend in the summary. Additionally, the similarity between responses regarding the best AMO the respondents ever knew and their ideal AMO reinforce one another. It was also encouraging to see the similarity between the description of the ideal AMO and the one for the AMO with whom the respondents presently work. It may mean current AMO training in SAC is in line with AMO requirements in the field.

The overall results of the analysis are not surprising when you consider the nature of the AMO's job. An AMO routinely faces situations in which he or she must deal with complex technical issues concerning aircraft systems and related equipment. In addition, the AMO must also handle many administrative tasks. An AMO must perform comfortably and competently in both arenas. The preference for a well-balanced AMO is certainly understandable. An individual who can not perform equally well in both the technical and administrative areas will most likely face tough times as an aircraft maintenance officer.

V. Conclusions and Recommendations

Chapter Overview

This chapter summarizes the results of the analysis presented in Chapter IV and answers the investigative questions and hypotheses posed in Chapter I. It also presents some limitations of the survey instrument which were identified during this research. The project concludes with recommendations for both future research and the aircraft maintenance field.

Limitations

All research projects have limitations; this project was no exception. Although a great deal of time and effort was spent building the survey instrument, several limitations surfaced only after the questionnaire was tested on several hundred subjects.

One of the most significant limitations of the survey instrument was the overabundance of nominal data. A more rigorous statistical analysis (particularly greater use of parametric statistics) could have been accomplished had the survey instrument contained only ratio and/or interval data. Another problem with the survey instrument may have been the number and mix of available options for any given question. It is possible an answer which described the respondents'

real feelings toward a particular question did not appear as an option.

Additionally, activities may have been mis-paired--one activity may have obviously been more important than the other--although the pretest of the questionnaire did not identify this condition. It is also possible that different results would have occurred had different groups of activities been constructed for the "rank order" questions. For example, it is conceivable that the number one choice in a particular group could have been the last choice when grouped with other activities.

Another item which may have confused persons who answered the questionnaire was the failure to differentiate between wartime and peacetime duties for the AMO. Many respondents may have assumed--as was intended--that this survey addressed normal peacetime operations, since many administrative duties would likely disappear in time of war. However, it seems reasonable to assume the majority of the skills required of AMOs in wartime should be the same as it is in peacetime.

One more limitation was the limited experience a number of respondents had in SAC and in aircraft maintenance. Nearly 17 percent of the officers had less than 3 years experience in aircraft maintenance. More than 13 percent of the officers and 20 percent of the NCOs had less than 3 years SAC experience. Although crosstabulations identified

where these factors caused significant differences in responses, it was one more confusion factor which had to be handled. Despite these and possibly other unidentified limitations to the study, a number of conclusions can be drawn regarding the expectations officers and NCOs have concerning the entry-level AMO.

Conclusions

Results from the analysis of the survey data failed to support either of the initial hypotheses. The two hypotheses were:

1. When viewed collectively, officers and NCOs will show no clear preference for administratively or technically oriented entry-level AMOs, but will indicate a preference for AMOs oriented equally to both areas.

2. When viewed separately, commissioned officers will prefer administratively oriented entry-level AMOs and NCOs will prefer technically oriented AMOs.

The answer to the first investigative question, "Do senior aircraft maintenance supervisory personnel at base level in SAC prefer administratively or technically oriented entry-level AMOs?" was unequivocal. The majority of officers and NCOs chose AMOs who were both technically and administratively oriented. This preference was most apparent when the respondents were asked to describe the best AMO they ever knew and how the ideal AMO should be

oriented. In both cases, more than 54 percent of each group said the entry-level AMO should be oriented equally to technical and administrative tasks.

The second investigative question asked, "To what degree do the commissioned officers' preferences agree/disagree with the noncommissioned officers' (NCOs) preferences?" Although there were significant differences in their answers to selected questions, the officers and NCOs agreed on nearly 85 percent of the answers. The best example of this agreement was seen in Section 8 where the officers' and NCOs' answers were almost identical on each question.

The third and final investigative question was, "Does a disagreement between officer and NCO preferences lend evidence to the need for entry-level AMOs to be oriented equally to both technical and administrative duties?" This question is strictly academic since the officers and NCOs appeared to be in agreement. They also preferred an AMO who was oriented equally to technical and administrative activities. In addition to answering the specific investigative questions, many general observations can be made from the survey results.

The survey participants voiced some distinct preferences and opinions regarding the entry-level AMO. Among the main points stressed by both officers and NCOs were those regarding the AMO's work priorities. Each group

expected the AMO's primary focus to be on maintenance activities instead of administrative activities. They expected the AMO to spend more time supervising maintenance activities than doing paper work.

Another expectation, directly related to the previous two, was the expected technical focus of the AMO's supervisory checks. This idea requires the AMO to have a sound technical knowledge of the assigned aircraft and aircraft systems--a point stressed more than once by officers and NCOs alike.

Recommendations for Future Research

The focus of this thesis was to determine the preferences senior aircraft maintenance managers in SAC had regarding the technical versus administrative orientation of entry-level AMOs. While much has been learned from this research, many questions have surfaced which may merit further examination.

First, are the expectations of SAC's officers and NCOs unique to SAC or are they the same as the expectations of maintenance managers throughout the Air Force? It would be interesting to compare the results of this research with those of the parallel studies conducted in TAC and MAC.

Second, are the expectations identified in this research actually being communicated to the entry-level AMO in SAC? If they are, what form of communication is being

used? If they are not, what is causing the lack of communication?

Also, are the entry-level AMOs in SAC meeting the expectations identified in this research? If they are, what is the cause of SAC's success? If they are not, what is the cause of the problem?

Another idea for future research would be to correct the limitations of the survey instrument and readminister the questionnaire. One suggested improvement is to mix the four options presented in each rank order area in all possible combinations. This would allow a relative comparison of all options. The refined survey instrument should provide more accurate and more applicable data. A critical analysis of stronger data might reinforce or dispute the conclusions presented in this thesis.

Further research in these areas might provide valuable insights to entry-level AMOs as well as senior maintenance managers. These insights may help identify AMO training requirements and increase the entry-level AMO's job performance.

Recommendations for the Field

This research does not provide the final word on the expectations of SAC's senior maintenance managers regarding the entry-level AMO. It was intended to provide a foundation--a place to begin--for a critical examination of

the expectations superiors and subordinates have for an entry-level AMO in SAC. There is valuable information here which can well serve the aircraft maintenance community.

Maintenance managers, particularly the officers, should examine the AMO's work environment in their organization and ask several questions. Are expectations of the entry-level AMO the same as those found in this research? If they are, how are they being communicated to the new AMO? Am I providing the entry-level AMO with the proper training and managerial climate he or she needs in order to meet expectations? The answers to these questions could determine in large part whether or not an organization produces competent AMOs. Here are two prime examples.

Officers and NCOs both claimed it was important for an entry-level AMO to "be experienced at coordinating flight line launch activities" prior to being upgraded to the fully qualified AFSC. In addition, they expected the AMO to primarily "supervise flight line work and determine maintenance work priorities" when deployed TDY. Given these conditions, the new AMO should be told in no uncertain terms what is expected of him or her. Furthermore, the new AMO must be trained in these areas prior to being expected to perform the tasks. An AMO cannot be relegated to being a paper shuffler on a daily basis and then be expected to miraculously become an experienced, competent, and knowledgeable maintenance manager when the need arises. The

AMO's skills must be carefully developed and guided throughout his or her early career. The potential gains for the command are great--a seasoned aircraft maintenance officer who can balance the technical and administrative requirements without compromising the importance of either.

Appendix: Survey Instrument

USAF SCN 88-25

SECTION 1

BACKGROUND INFORMATION

This section of the survey contains several items dealing with personal characteristics. This information will be used to obtain a general picture of the background and experience of the person responding.

1. What is your current rank?
 - a. Airman - TSgt
 - b. MSgt - SMSgt
 - c. CMSgt
 - d. 2Lt - 1Lt
 - e. Capt - Maj
 - f. LtCol - Col
 - g. Civilian
2. What position do you now hold?
 - a. Shop Chief/Flight Chief
 - b. Branch Chief/AMU NCOIC
 - c. Maintenance Superintendent
 - d. Maintenance Supervisor
 - e. Squadron Commander
 - f. DCM/Assistant DCM
3. How long have you been in the Air Force?
 - a. Less than 5 years
 - b. 5 years or more but less than 10 years
 - c. 10 years or more but less than 15 years
 - d. 15 years or more but less than 20 years
 - e. 20 years or more but less than 25 years
 - f. 25 years or more
4. How many years have you been in the aircraft maintenance field?
 - a. Less than 3 years
 - b. 3 years or more but less than 6 years
 - c. 6 years or more but less than 9 years
 - d. 9 years or more but less than 12 years
 - e. 12 years or more

5. How many years have you spent in SAC?
- a. Less than 3 years
 - b. 3 years or more but less than 6 years
 - c. 6 years or more but less than 9 years
 - d. 9 years or more but less than 12 years
 - e. 12 years or more
6. How long have you been in your present type of position?
Include all time spent in similar level jobs at different bases or organizations within your present command.
- a. Less than 6 months
 - b. 6 months or more but less than 12 months
 - c. 12 months or more but less than 18 months
 - d. 18 months or more but less than 24 months
 - e. 24 months or more but less than 36 months
 - f. 36 months or more
7. Do you now hold or have you ever held an aeronautical rating?
- a. Yes
 - b. No
8. Which category best describes your status?
- a. Enlisted
 - b. Commissioned Officer with no prior enlisted time
 - c. Commissioned Officer with under 4 years prior enlisted time
 - d. Commissioned Officer with 4 or more years prior enlisted time
 - e. Civilian

SECTION 2

In each of the following questions, you are given two activities. Select the activity you think is the more important of the two for the entry-level aircraft maintenance officer to perform.

- 9. a. Ensuring availability of support equipment
 b. Knowing how to operate support equipment
- 10. a. Understanding subordinates' training requirements
 b. Training subordinates
- 11. a. Briefing safety requirements
 b. Performing safety inspections
- 12. a. Learning technical issues of the aircraft system(s)
 b. Learning the administrative duties of the job
- 13. a. Resolving personnel problems
 b. Resolving technical problems

SECTION 3

In the following set of questions, pick the one answer that best represents your feelings.

- 14. What should be the primary function of a maintenance officer when deployed TDY?
 - a) Troubleshoot major aircraft system malfunctions
 - b) Handle the paperwork requirements
 - c) Supervise flight line work and determine maintenance work priorities
 - d) Perform simple maintenance tasks (ie. marshalling, refueling, etc.)
 - e) Schedule duty hours for maintenance personnel
 - f) Act as figurehead without actually getting involved

15. On which one of the following should the maintenance officer concentrate supervisory checks?
- a) Completed maintenance actions
 - b) In-process maintenance actions
 - c) Reports and APRs
 - d) Personnel training currency
 - e) Launching aircraft
 - f) Appearance of personnel (AFR 35-10)
16. It is most important for the maintenance officer to:
- a) Perform aircraft maintenance work and understand administrative work
 - b) Perform aircraft maintenance work and perform administrative work
 - c) Perform administrative work and understand aircraft maintenance work
 - d) Understand administrative work and understand aircraft maintenance work

SECTION 4

In the following four groups of questions, rank order the listed duties of an entry-level aircraft maintenance officer from what you feel is the most important (A) to the least important (D). Rank each group separately.

Group 1- Questions 17-20

- 17. Troubleshoot aircraft maintenance problems
- 18. Write/edit APRs, reports, etc.
- 19. Schedule maintenance activities
- 20. Attend meetings

Group 2- Questions 21-24

- 21. Perform Quality Assurance inspections on work
- 22. Answer Quality Assurance reports
- 23. Monitor training status
- 24. Ensure availability of proper tools and equipment

Group 3- Questions 25-28

- 25. Evaluate maintenance data reports
- 26. Administer recognition programs
- 27. Prepare assorted paperwork
- 28. Perform simple maintenance tasks

Group 4- Questions 29-32

- 29. Direct maintenance activities
- 30. Provide personal administrative expertise to superiors
- 31. Provide personal technical expertise to superiors
- 32. Direct administrative activities

In the following questions, rank order the experiences/backgrounds for an entry-level maintenance officer from what you would most prefer (A) to what you would least prefer (F).

- 33. Prior enlisted aircraft maintenance
- 34. Prior enlisted aircrew member
- 35. Prior enlisted other
- 36. Prior officer aircrew member
- 37. Officer cross trainee (non-aircrew)
- 38. No prior experience necessary

SECTION 5

This section of the questionnaire contains a number of statements describing the duties of an entry-level aircraft maintenance officer. Use the rating scale provided to show the extent to which you agree or disagree with the statements shown.

- | A | B | C | D | E |
|----------------|--|----------------------------|-------------------|-------------------|
| Strongly agree | Slightly agree | Neither agree nor disagree | Slightly disagree | Strongly disagree |
| 39. | A maintenance officer should concentrate on handling technical problems more than people problems. | | | ----- |
| 40. | A maintenance officer should understand administrative procedures better than technical information (i.e. aircraft systems). | | | ----- |
| 41. | A maintenance officer should spend more time supervising maintenance activities than doing paperwork. | | | ----- |
| 42. | A maintenance officer should develop new maintenance techniques rather than develop new administrative policies. | | | ----- |
| 43. | A maintenance officer should demonstrate technical competence by briefing aircraft status instead of speaking at ceremonial events (i.e. banquets, tours). | | | ----- |
| 44. | A maintenance officer should concentrate on writing administrative reports (APRs, awards and decorations) instead of technical reports (QA reports, MOIs). | | | ----- |
| 45. | A maintenance officer should handle people problems better than technical problems. | | | ----- |
| 46. | The primary function of a maintenance officer is to look after the morale of personnel and handle duties like CFC instead of managing maintenance actions. | | | ----- |
| 47. | A maintenance officer should be a contact point for flying operations and upper maintenance management instead of acting as a technical advisor to those people. | | | ----- |
| 48. | A maintenance officer is principally responsible for maintenance activities instead of administrative activities. | | | ----- |

SECTION 6

Maintenance officers have to meet certain requirements to be upgraded to the fully qualified AFSC. The following is a list of activities that may or may not be important for a maintenance officer to be capable of performing prior to upgrade. Mark (A) for those activities you feel are important and (B) for those activities you feel are not important for upgrade.

- 49. Operate support equipment (power units, light carts) -----
- 50. Perform simple maintenance tasks (marshalling, refueling) -----
- 51. Complete an academic technical course on the assigned weapon system -----
- 52. Complete a hands-on technical course on the assigned weapon system -----
- 53. Complete a supervisor's course -----
- 54. Complete an effective writing course -----
- 55. Be experienced at coordinating flight line launch activities -----
- 56. Understand and use the Technical Order system and relevant Technical Orders -----
- 57. Understand in detail how the supply system works -----
- 58. Have an in-depth knowledge of aircraft scheduling -----
- 59. Know how to properly document aircraft forms -----

SECTION 7

In the following set of questions, select the one answer that best represents your feelings.

60. What academic education produces better maintenance officers?
- a) Administrative/ Business/ Management
 - b) Engineering/ Science/ Technical
 - c) Liberal Arts (Music, Art, History, etc.)
 - d) Academic education is not important
61. Which of the following types of training is most important for a maintenance officer?
- a) General aircraft systems course
 - b) Report writing and briefing course
 - c) In-depth technical training on the assigned weapon system
 - d) Training on Air Force and Command Regulations
 - e) Formal management training

SECTION 8

Using the rating scale provided, select the answer (A to E) that most closely represents your feelings about the abilities and characteristics of an entry-level maintenance officer. If you most strongly agree with the statement on the left, select "A". If you most strongly agree with the statement on the right, select "E".

- | A | B | C | D | E |
|-----------------------------------|---|---|---|---|
| Highly
technically
oriented | | Equally
technically
and
administratively
oriented | | Highly
adminis-
tratively
oriented |
| 62. | | Think of the best maintenance officer you have known.
Where would that person fall on the scale? | | ----- |
| 63. | | Think of the worst maintenance officer you have known.
Where would that person fall on the scale? | | ----- |
| 64. | | Think about the maintenance officer(s) with whom you
now work. (If you work with more than one, consider
the one who most stands out in your mind.) Where
would that person fall on the scale? | | ----- |
| 65. | | Finally, where do you feel the ideal maintenance
officer should fall on the scale? | | ----- |

THANK YOU FOR COMPLETING THIS SURVEY

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A random sample of 300 senior aircraft maintenance managers in the Strategic Air Command was surveyed using a specially developed questionnaire to determine preferences regarding the technical versus administrative orientation of entry-level aircraft maintenance officer (AMO) jobs. Specific expectations of commissioned officers and noncommissioned officers (NCOs) were examined to determine whether any difference in expectations existed between the two groups. Relationships between expectations and the following variables were examined: rank, duty position, aircraft maintenance experience, command experience, Air Force longevity, duty position tenure, and aeronautical rating of officers. Answers to selected questions varied significantly by one or more of these variables. Analysis of the results showed both groups expected an entry-level AMO to be slightly more technically than administratively oriented. Based on these findings, recommendations were made to improve entry-level AMO job performance.

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